N° 2545 A.D. 1895

Date of Application, 5th Feb., 1895

Complete Specification Left, 9th July, 1895—Accepted, 23rd Nov., 1895

PROVISIONAL SPECIFICATION.

Improvements in or relating to Fastening Devices for Trusses and other Surgical Appliances.

I, Karl Robert Schramm of 47 Belmont Street, Chalk Farm Road, County of Middlesex, Orthopaedic Mechanician, do hereby declare the nature of this invention to be as follows :—

This invention relates to the devices for fastening together the springs and pads of trusses and the pads or other parts of other surgical appliances ; I will describe it as applied to connecting the springs and pads of hernia trusses. The back or spinal pad is preferably formed by a suitable soft pad secured upon a metal plate perforated towards each end where the two springs are to be connected. The two nearest edges of the perforations are turned up so as to form a back or support for the end of the spring and a pin is carried across each of the openings thus formed the pin being supported in any convenient manner say by ears or lugs rivetted to the back of the plate and projecting up through each of the slots. The whole is secured and strengthened by a smaller plate which may be passed along the back of the plate previously described and rivetted thereto.

The end of the spring to be connected to the plate is turned round in the form of a hook and can be slipped under the pin between it and the smaller supporting plate and brought round between the pin and the back support previously mentioned, the spring being thus securely connected to the plate and pad, but at the same time free to turn as on a hinge ; the spring can be detached at any moment when required.

The pad at the other end of the spring may be adjustably connected thereto by a suitable socket through which the spring passes and is secured by a pin preferably pivotted or hinged which enters one of a series of holes in the spring and passes through it into the plate upon which the pad is formed thus fixing the pad and spring together. The socket preferably consists of a piece of bent metal passed through slots in the plate and rivetted upon the back of it. Lugs or brackets are provided upon the plate or socket preferably the latter so as to form a hinge connection for the pivotted pin already described.

Hitherto where fittings of this nature have been employed the attachments to the plate did not pass through it as above described, but merely rested upon it and were secured by screws, but it was found that they were apt to work loose and were besides usually cast in gun metal and were therefore heavy and to some extent clumsy, whereas the present fittings can all be made of thin stampings light, elegant and secure.

As regards trusses the pads have not hitherto been made detachable from the springs, but a very great advantage results from this arrangement inasmuch as the shape size and resistance of the pad can be promptly varied and also a stronger or weaker spring or one of a different shape or size can be applied at any time or a truss can be immediately prepared from the various parts to meet any special requirements, and the whole truss is by the construction above described lighter than those usually made and no screws of any kind are employed.

Hitherto the cross strap usually employed for connecting the two front pads has been a simple strap and was therefore liable to press upon the wearer between the pads ; to avoid this I place in or upon the strap (preferably the strap is double and

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stitched together around the edges) a spring or strip of metal shaped or bowed outwards so as to relieve this pressure and prevent the strap from taking a perfectly straight course from pad to pad. The strap is provided with a number of holes at each end so as to adjust it to length or other length adjustment may be adopted.

Dated this 5th day of February 1895.

BOULT & WADE,
Agents for the Applicant.

COMPLETE SPECIFICATION.

Improvements in or relating to Fastening Devices for Trusses and other Surgical Appliances.

I, Karl Robert Schramm of 47 Belmont Street, Chalk Farm Road, County of Middlesex, Orthopaedic Mechanician, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to the devices for fastening together the springs and pads of trusses and the pads or other parts of other surgical appliances; I will describe it as applied to connecting the springs and pads of hernia trusses.

In the accompanying drawings, which illustrate by way of example the application of my invention to a hernia truss,

Figure 1 is a perspective view of the complete truss,

Figure 2 is a view, presented edgewise, of the back or spinal pad-plate and of the hooked end of one of the two spring arms which is to be connected therewith as hereinafter explained; parts of this view are in section.

Figure 3 is a view similar to Figure 2 except that the spring arm is shown in engagement with the back pad-plate, whilst

Figure 4 also a view similar to Figure 2 shows the spring arm the back pad-plate and appurtenances in the position they are intended to occupy, relatively to each other, when the truss is in use.

Figures 5 and 6 are respectively perspective plan and underside views of the pad-piece which is adjustable on the spring arm of the truss.

Figure 7 is a section on the line 7 7 of Figure 5.

Figure 8 is a perspective view of that end of the spring arm on which the pad-piece (Figures 5 and 6) is adjustable,

Figure 9 is a section on the line 9 9 of Figures 5 and 8 and shows the pad-piece and spring arm engaged with each other; and

Figures 10 and 11 are perspective plan and underside views respectively of an alternative construction of back-pad-plate according to this invention.

Like letters indicate like parts throughout the drawings.

With reference first to Figures 1 to 9 A is the back pad-plate to which a suitable soft pad can be secured in a manner well understood. At each end two lugs A^1 are struck up out of the solid plate as shown. B is a hinge-pin extending between the individual lugs of each pair as shown and having its ends rivetted over to retain it in position. In proximity to each hinge-pin are two studs C with their lower ends fixed in the pad-plate A and their upper ends bevelled off as shown on the side which faces away from the adjacent hinge-pin. The clearance, or least distance between each stud and the hinge pin is approximately equal to or very little greater than the thickness of metal of the hook-shaped end of the spring arm hereinafter described.

D are spring plates one of which is situated below each hinge pin at the opposite side of the pad-plate A thereto. Each spring plate D is rigidly secured by one end D^1 to the pad-plate A, and provided at its outer end with a pin D 2 which projects through a hole A 2 in the plate A.

E are the spring arms of the truss. Each of them is an elastic strip of metal which at one end is bent to form a hook E^1 and at the other end has a series of perforations E 2.

E 3 E 4 are depressions in the exterior or convex surfaces of the hooks E^1, the former to receive the pins D 2 and the latter to receive the studs C as hereinafter described. E 5 are marks made upon the spring arms to serve when brought to the edge of the pad-plates to indicate which of the perforations E 2 is under the detent of the pad-piece.

F F are the pad-plates which are adjustable on the perforated ends of the spring arms E, and like the back pad-plate may have soft facings as is customary. Each pad-piece F consists of two plates F^1 F 2 of sheet metal, one of which (F 2) is of channel form in cross section as shown and is secured to the other (F^1) by rivets F 3 and by bending over on to that other, tongues F 4 which are integral with the plate F 2. By the arrangement of the channelled plate F 2 as shown, relatively to the plate F^1 a channel F 5 is constituted, in which one of the spring arms E is received. G is a detent pivotted upon the plate F^1 of each pad-piece F, by a hinge-pin H, the latter being held in place by lugs F 6 struck up like those (A^1) on the back pad-plate A. Holes F 7 are made opposite each other in the plates F^1 F 2 and a tongue G^1 is arranged on the detent so that it can pass through both these holes to lie across the channel F 5. The tongue is notched as at G 2 and the detent G and holes F 7 are so arranged relatively to each other that the tongue G^1 presses laterally, in passing, against the edge of the hole F 7 in the plate F^1 and therefore has to be forced therethrough; consequently when forced far enough it springs to an extent sufficient to engage it, at its notched part with the underside of that plate, and cannot be accidentally freed therefrom. To free the pad-plate from the arm all that is necessary is the application of sufficient force to the pad-piece to cause the plate F 2 to thrust back and raise the pointed end of the detent.

Hitherto where fittings of this nature have been employed the attachments to the plate F^1 merely rested upon it and were secured by screws, but it was found that they were apt to work loose and were besides usually cast in gun metal and were therefore heavy and to some extent clumsy, whereas the present fittings can all be made of thin stampings light, elegant and secure.

To connect each spring arm E with the back pad-plate A the end E 6 of the hook E^1 is insinuated between one of the hinge-pins B and the pin D 2 below it, first depressing the latter and its spring D so that the pin D 2 engages with one of the depressions E 3 as shown in Figure 3; next it is turned about the hinge-pin B into the position in which it is shown in Figure 4. In assuming this latter position the end E 6 of the hook is deflected inward by being forced along the studs C, which slightly yield, simultaneously, and are received in the depressions E 4 which are provided in order that the studs may not offer too much hindrance to this first part of the movement of the spring arm; after passing these studs the hooked end restores itself, elastically, to its original form, and therefore will not become disengaged from the hinge-pin B except by an operation the reverse of that just described. Further by the time that the spring arm has turned about its hinge pin into the position in which it is shown in Figure 4 the depressions E 4 have passed clear of the studs C which consequently are sprung back a little from the hinge-pins and thus bear with increased force upon an undepressed part of the hook so as to hold it securely in position.

To adjust a pad-plate F upon the perforated end of one of the spring arms E the latter is introduced into the channel F 5 and any desired one of its perforations E 2 is brought into line with the holes F 7 of the pad-plate E whereupon the detent G is moved to cause its tongue G^1 to pass through the perforation E 2 and holes E 7 and lie across the pad-piece F and channel F 5 to retain the pad-piece in position and to lock itself in the manner hereinbefore described. With reference now to the alternative construction of back-plate illustrated in Figures 10 and 11 the hinge-pins B are carried by lugs A^1 rivetted to the base-plate A, and the spring plates D have tongues D 3 thereon which partly encircle each hinge pin B at one side, the opposite side thereof being partly encircled, to a greater extent by the hooked part H^1 of a strip H. There are two of these strips, one for each hinge-pin, and the straight part H 2 of each is received in a guide A 3 secured to the base-plate. I is a spring which is compressed between projections H 3 of the two strips H and acts to keep the hooked parts H^1 thereof close to the hinge-pins B whilst permitting those parts to be moved away from the hinge pins when the hooked end E^1 of a spring arm E (such as is shown in Figure 2) is engaged with the hinge-pin. Such engagement is effected by forcing the hooked end of the spring arm over the spring plate D and causing the edge of the hook to pass between the hinge-pin and the hooked part H^1 of the strip H. The spring plate D will then bear against the hook in such manner as to keep it steady in any position into which it is moved about the pin B.

As regards trusses all the pads have not hitherto been made detachable from the springs, but a very great advantage results from this arrangement inasmuch as the shape size and resistance of the pad can be promptly varied and also a stronger or weaker spring or one of a different shape or size can be applied at any time or a truss can be immediately prepared from the various parts to meet any special requirements, and the whole truss is by the construction above described lighter than those usually made and no screws of any kind are employed.

Hitherto the cross strap usually employed for connecting the two front pads across the front of the wearer has been a simple strap and was therefore liable to press upon the wearer between the pads; to avoid this I place in or upon the strap (preferably the strap is double and stitched together around the edges) a spring or strip of metal shaped or bowed outwards so as to relieve this pressure and prevent the strap from taking a perfectly straight course from pad to pad. The strap is provided with a number of holes at each end so as to adjust it to length or other length adjustment may be adopted.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A surgical truss or the like in which the spring arms and the pads are all adapted for prompt disconnection.

2. A surgical truss or the like in which the back pad-piece and spring arm or arms are adapted for prompt disconnection.

3. In a surgical truss or the like the combination with the back pad-piece A and spring arm E of hinge fastening-devices which maintain those parts in the desired connection with each other and are specially constructed to facilitate their connection and disconnection substantially as and for the purpose described.

4. In a surgical truss or the like the combination with the hinged arm E of spring devices such as D E 3 for maintaining the arm in one or more of the several positions into which it can be turned about its hinge substantially as described.

5. In a surgical truss or the like the combination with a back pad-plate A of spring arm E hinged thereto spring device such as D E 3 controlling the spring arm a pad plate such as F adjustable on said arm and a spring device such as G for retaining the adjustable pad-plate in position substantially as described and illustrated in the accompanying drawings.

6. In a surgical truss or the like the combination with the back pad A and spring arm E of a hinge connection and controlling device therefor substantially as and for the purpose described and illustrated in Figures 2, 3 and 4 or Figures 10 and 11 of the accompanying drawings.

7. In a surgical truss or the like the combination with the spring arm E of a pad-plate adjustable thereon and a locking device for the latter substantially as described and illustrated in Figures 5 to 9 of the accompanying drawings.

8. In a surgical truss or the like a pad-plate having a retaining device thereon substantially as and for the purpose described and illustrated in Figures 5, 6 and 7 of the accompanying drawings.

9. In a surgical truss or the like a sheet metal pad-piece substantially as described and illustrated in Figures 6 and 7 of the accompanying drawings.

10. The combination and arrangement of parts constituting the surgical truss substantially as and for the purpose described and illustrated in Figure 1 of the accompanying drawings.

Dated this 17th day of June 1895.

K. R. SCHRAMM.
Boult & Wade,
Agents for the Applicant.

London: Printed for Her Majesty's Stationery Office, by Darling & Son, Ltd.—1895

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(2 SHEETS)
SHEET 1.

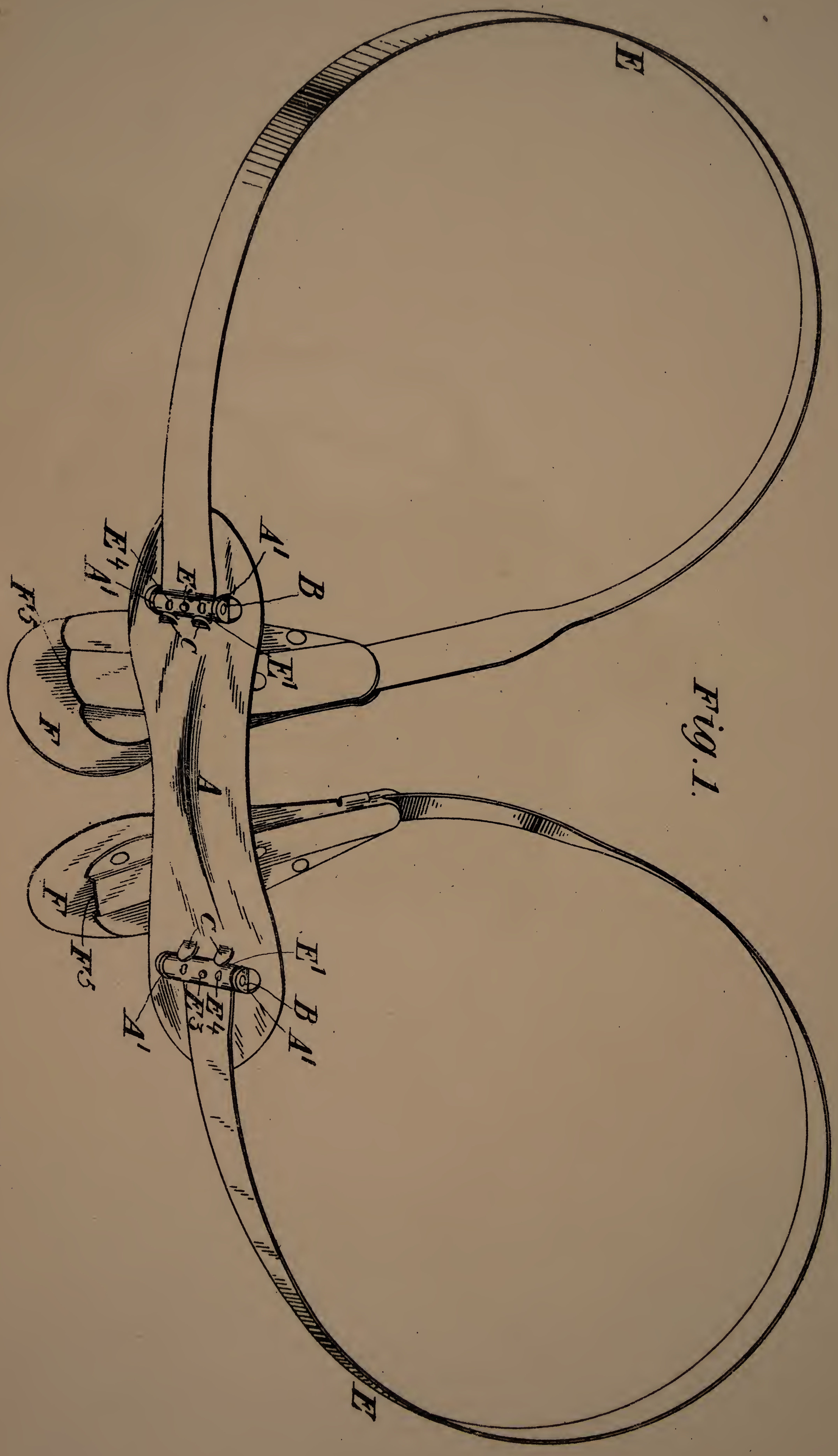

Fig. 1.

[This Drawing is a reproduction of the Original on a reduced scale]

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Fig. 2.

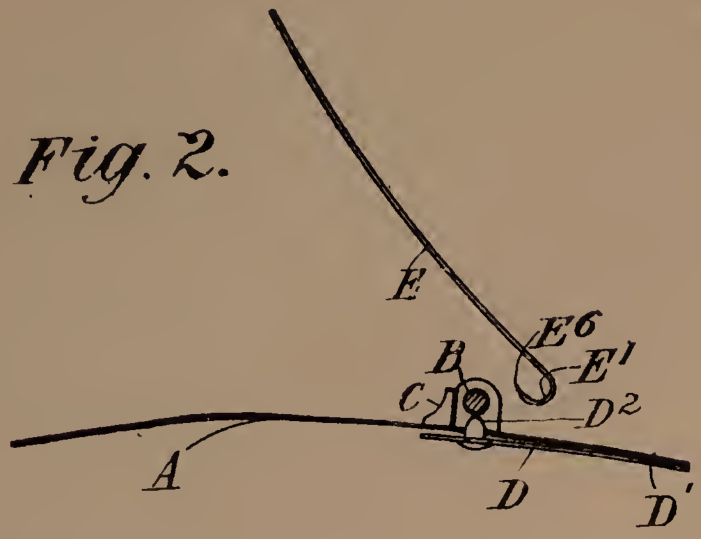


Fig. 3.

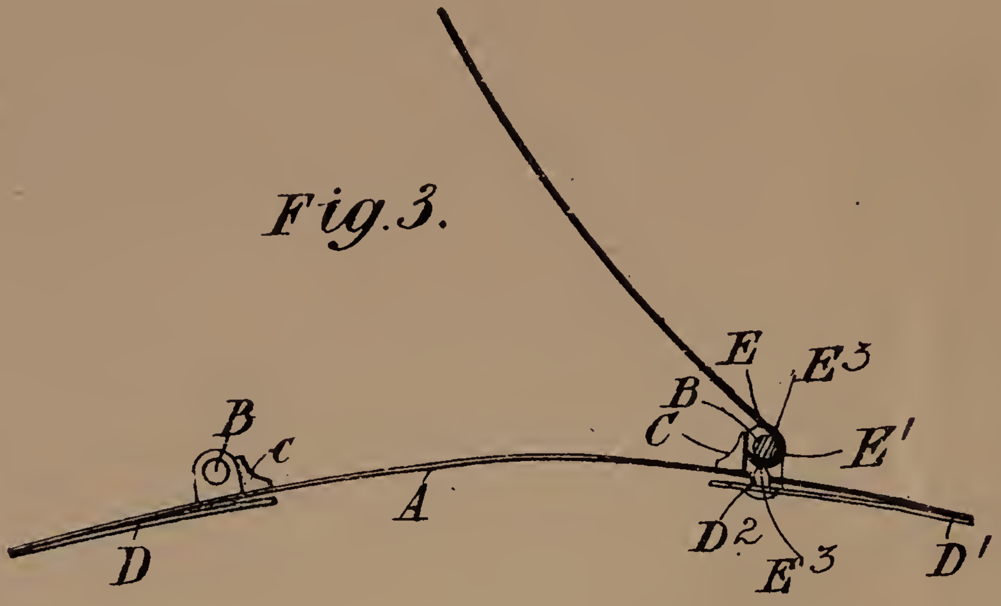


Fig. 4.

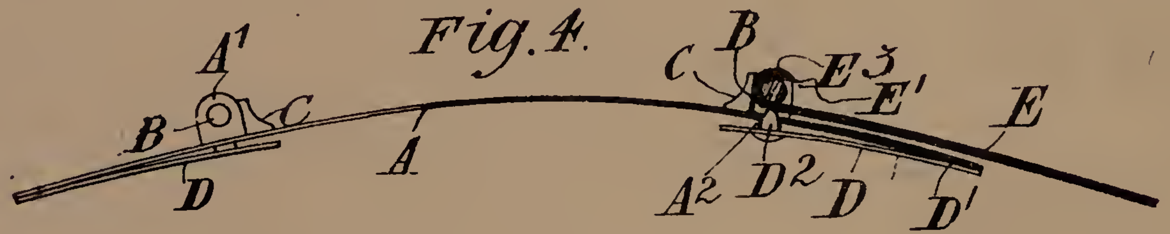


Fig. 5.

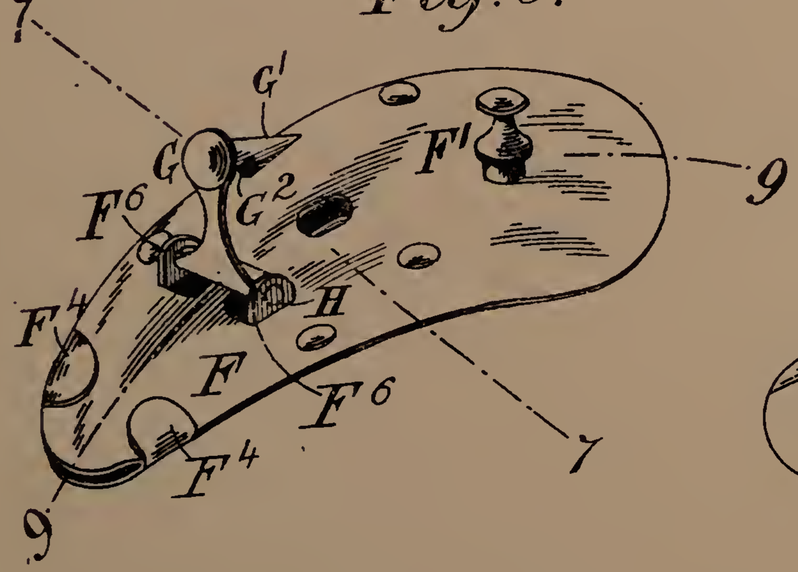


Fig. 6.

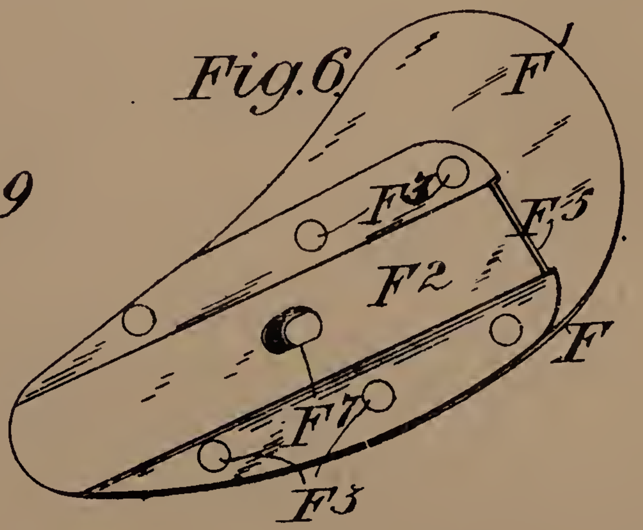


Fig. 7.

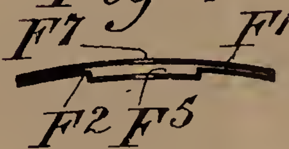


Fig. 8.

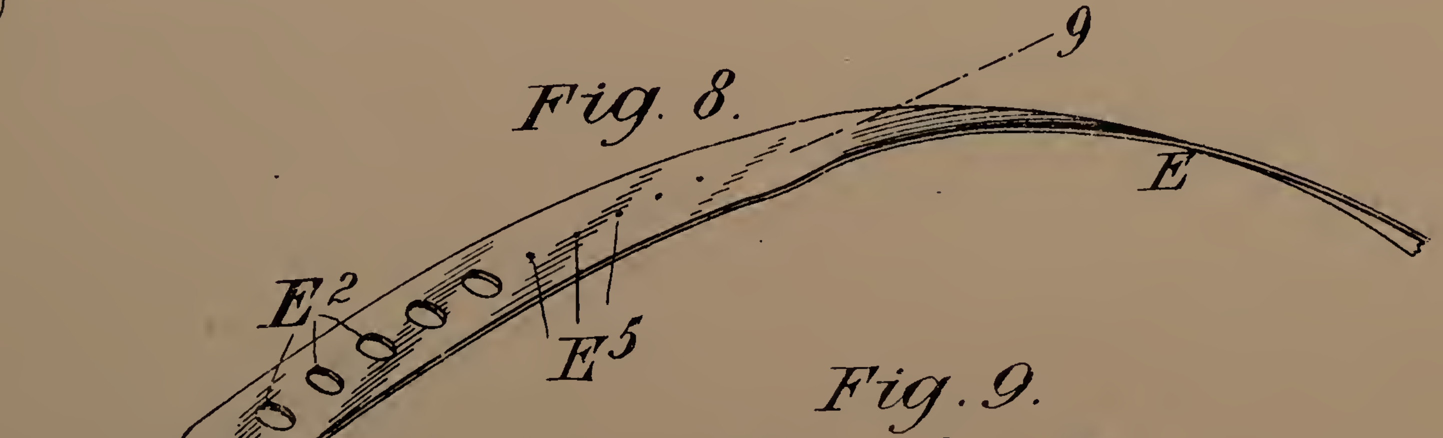


Fig. 9.

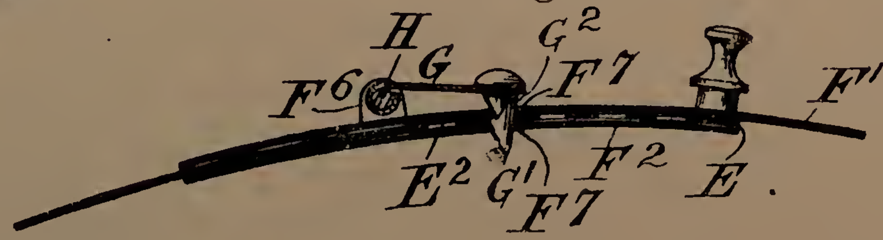


Fig. 10.

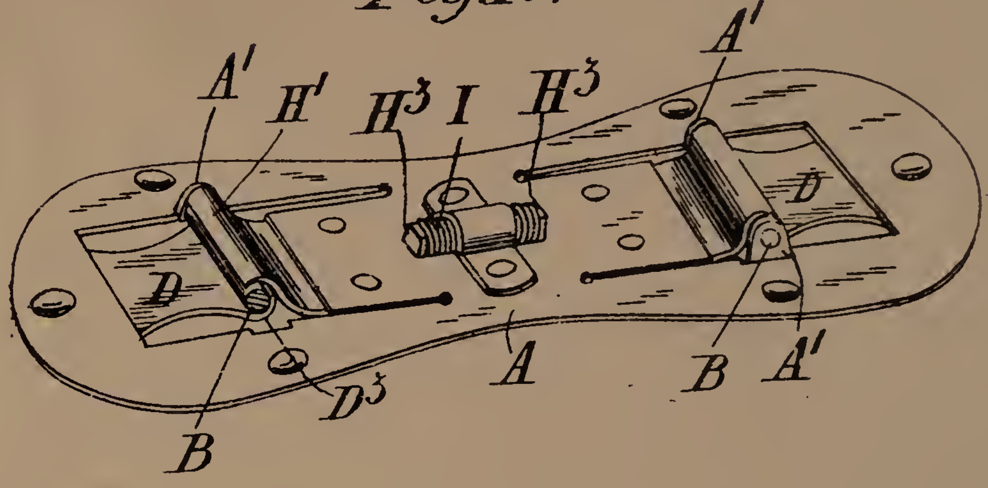
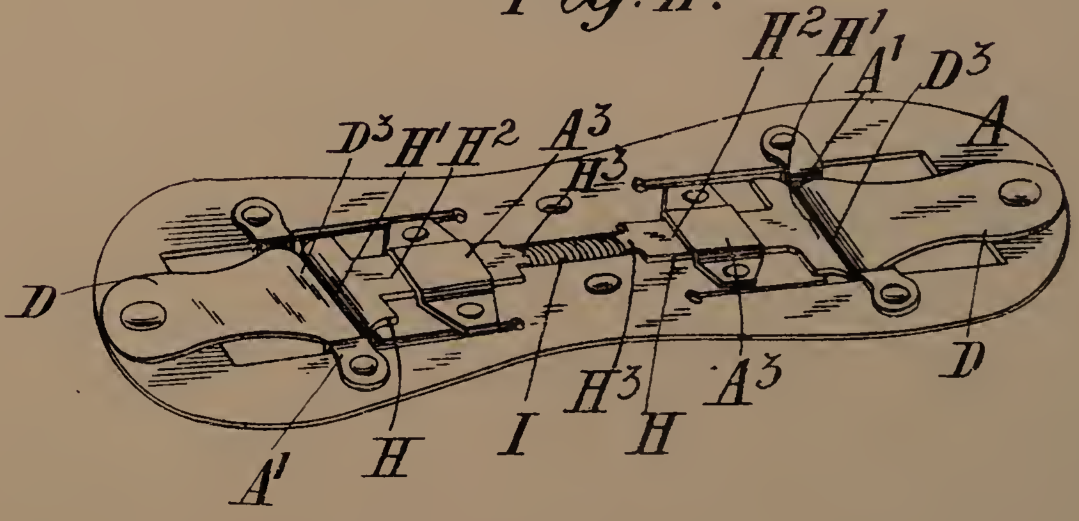


Fig. 11.



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